

In re Patent Application of:

RAYNOR

Serial No. 10/008,606

Filed: **DECEMBER 6, 2001**

In the Claims:

Claims 1-10 (Cancelled).

11. (Previously presented) A solid state image sensor comprising:

an array of pixels and a corresponding array of microlenses disposed adjacent said array of pixels, positions of said microlenses relative to corresponding pixels varying based upon distances of said corresponding pixels from a central optical axis of the solid state image sensor to substantially eliminate vignetting of light collected by said microlenses;

said array of microlenses being divided into blocks each comprising a plurality of said microlenses, and within at least one of said blocks the positions of said microlenses relative to said corresponding pixels thereof being varied by an equal amount.

12. (Previously presented) The solid state image sensor of Claim 11 wherein said microlenses within each of said blocks are substantially equally spaced apart from one another a first distance, and wherein adjacent blocks of microlenses are spaced apart from one another a second distance less than the first distance.

13. (Previously presented) The solid state image sensor of Claim 11 wherein said microlenses are substantially equally

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spaced from one another throughout said array of microlenses, and wherein a plurality of microlenses in each of said blocks at edges thereof are smaller in at least one dimension than said remaining microlenses in each of said blocks.

14. (Previously presented) The solid state image sensor of Claim 11 wherein said blocks are substantially rectangular.

15. (Previously presented) The solid state image sensor of Claim 11 wherein said blocks have irregular edges, and wherein said blocks are tessellated to form a substantially continuous array of microlenses.

Claims 16-19 (Cancelled).

20. (Previously presented) An imaging system comprising:

 a solid state image sensor comprising
 an array of pixels and a corresponding array of microlenses disposed adjacent said array of pixels, positions of said microlenses relative to corresponding pixels varying based upon distances of said corresponding pixels from a central optical axis of said solid state image sensor to substantially eliminate vignetting of light collected by said microlenses, said array of microlenses being divided into blocks each comprising a plurality of said microlenses, and within at least one of said blocks the positions of said microlenses

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relative to said corresponding pixels thereof being varied by an equal amount; and

a display for cooperating with said solid state image sensor to display images therefrom.

21. (Previously presented) The imaging system of Claim 20 wherein said microlenses within each of said blocks are substantially equally spaced apart from one another a first distance, and wherein adjacent blocks of microlenses are spaced apart from one another a second distance less than the first distance.

22. (Previously presented) The imaging system of Claim 20 wherein said microlenses are substantially equally spaced from one another throughout said array of microlenses, and wherein a plurality of microlenses in each of said blocks at edges thereof are smaller in at least one dimension than said remaining microlenses in each of said blocks.

23. (Previously presented) The imaging system of Claim 20 wherein said blocks are substantially rectangular.

24. (Previously presented) The imaging system of Claim 20 wherein said block have irregular edges, and wherein said blocks are tessellated to form a substantially continuous array of microlenses.

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Claims 25-28 (Cancelled).

29. (Previously presented) A camera comprising:

a housing; and

a solid state image sensor carried by said housing and comprising

an array of pixels and a corresponding array of microlenses disposed adjacent said array of pixels, positions of said microlenses relative to corresponding pixels varying based upon distances of said corresponding pixels from a central optical axis of said solid state image sensor to substantially eliminate vignetting of light collected by said microlenses,

said array of microlenses being divided into blocks each comprising a plurality of said microlenses, and within at least one of said blocks the positions of said microlenses relative to said corresponding pixels thereof being varied by an equal amount.

30. (Previously presented) The camera of Claim 29 wherein said microlenses within each of said blocks are substantially equally spaced apart from one another a first distance, and wherein adjacent blocks of microlenses are spaced apart from one another a second distance less than the first distance.

31. (Previously presented) The camera of Claim 29 wherein said microlenses are substantially equally spaced from

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one another throughout said array of microlenses, and wherein a plurality of microlenses in each of said blocks at edges thereof are smaller in at least one dimension than said remaining microlenses in each of said blocks.

32. (Previously presented) The camera of Claim 29 wherein said blocks are substantially rectangular.

33. (Previously presented) The camera of Claim 29 wherein said blocks have irregular edges, and wherein said blocks are tessellated to form a substantially continuous array of microlenses.

Claims 34-37 (Cancelled).

38. (Previously presented) A method for substantially eliminating vignetting of light collected by microlenses disposed adjacent an array of pixels in a solid state image sensor, the method comprising:

 varying positions of the microlenses relative to corresponding pixels based upon distances of the corresponding pixels from a central optical axis of the solid state image sensor;

 dividing the microlenses into a plurality of blocks of microlenses; and

 varying positions of a plurality of microlenses within at least one of the blocks of microlenses relative to

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corresponding pixels thereof by an equal amount.

39. (Previously presented) The method of Claim 38 wherein the microlenses within each of the blocks are substantially equally spaced apart from one another a first distance, and wherein adjacent blocks of microlenses are spaced apart from one another a second distance less than the first distance.

40. (Previously presented) The method of Claim 38 wherein the microlenses are substantially equally spaced from one another throughout the array of microlenses, and wherein a plurality of microlenses in each of the blocks at edges thereof are smaller in at least one dimension than the remaining microlenses in each of the blocks.

Claims 41-44 (Cancelled).